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## (54) A CHAIR OR COUCH

(71) I, FRITZ KERSTHOLT, of 11 Am Wackenbach, D-6331 Leun, Germany (Fed. Rep.), a citizen of the Federal Republic of Germany, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a chair or couch.

In some known chairs or couches the seat supporting means is so coupled to the backrest supporting means that, even when under load by a user, the seat support and the backrest support cannot each be pivotably displaced about their respective hinge means independently of one another within predetermined limits.

According to the present invention, there is provided a chair or couch comprising a base member, a first support carrying a seating surface for supporting the seat of a user, a second support carrying a backrest member for supporting the back of a user, the first support being connected to the base member by first hinge means so as to be pivotable about a horizontal axis, the second support being pivotably connected to the base member by second hinge means so as to be pivotable about a horizontal axis, and resilient means so connected to the second support that the latter is resiliently urged towards and supports the back of a user, the first support and the second support each—when loaded by a user—being pivotably displaceable independently of one another within predetermined limits about the respective hinge means, the first hinge means being so located relative to the first support that the first support may, at the option of a user seated on the first support with his back always in supporting contact with the backrest, be both rearwardly and forwardly inclined relative to the horizontal by the user adjusting his posture and thereby varying the pressure of the user's thighs on a part of the first support projecting forwardly

of the first hinge means without substantial displacement of the weight of the user relative to the first hinge means.

Advantageously, the horizontal axis of the second hinge means is situated on or next adjacent a straight line bisecting the circular arc described by a straight line through both hip joints of a user sitting normally on the first support during the simultaneous and mutually independent movement of the first and second supports. The resilient means can engage the second support via at least one lever arm which is rigidly connected to the second support, this lever arm being so disposed relative to the line of action of the resilient means that, on the second support being pivotably displaced in such a direction as to increase the force exerted thereon by the resilient means, the leverage exerted on the second support by the resilient means progressively increases.

The two supports may be brought into different positions independently of one another, i.e. each support may be positioned independently of the instantaneous position of the respective other support in a stepless manner. With the known articles of furniture of the named kind, this is not possible. Beyond this however, the second support during the movement of the first support can be left and possibly fixed in its relative position, which is of importance in particular in the case of application of the article of furniture during operations frequently repeating themselves and to be carried out in different seating behaviours, for example during application at assembly lines or at writing desks. In these cases, the first support can be moved together with the user, which even in these more or less short seating phases provides a healthy sitting posture and may provide better operating possibilities. By appropriate positioning of the second hinge means and by suitable geometry of the second support, that the part of the second support which comes

into contact with the back of the user during its pivoting movements is not substantially displaced along the back of the user, but is maintained in a substantially unchanged position relative to the back of a user. Thus, the outer clothing of a user seated in the chair is not appreciably rubbed or crumpled by the backrest sliding over the outer clothing contacting the backrest.

Embodiments of the present invention will now be more particularly described with reference to the accompanying drawings, in which:—

Fig. 1 shows a chair with rotary support in accordance with one embodiment of the invention;

Fig. 2 shows a chair with arresters for the movements of the support parts;

Fig. 2a shows details of a quick tension device for the arresters;

Fig. 2b shows details of another quick tension device, coming stepwise into action, for the arresters (plan view);

Fig. 3 shows a further example of a chair embodying the invention;

Fig. 4 shows a still further example of a chair embodying the invention;

Fig. 5 shows yet another example of a chair embodying the invention;

Fig. 5a shows a control device for the chair shown in Fig. 5;

Figs. 6, 7 show two further chairs each embodying the invention;

Fig. 8 shows an easy chair provided with a support for the lower positions of the legs of a user; and

Fig. 9 shows a couch embodying the invention.

In Fig. 1, an article of furniture is represented in the form of a chair in a loaded position. The chair is provided with a rotatable column mount 12<sup>1</sup> carrying a horizontal axle 11. A first support 10 consisting of carrier 10<sup>11</sup> and a shaped seat 10<sup>1</sup> is rotatably mounted on the axle 11. Thus, the first support 10 provides a seating surface for supporting the seat of a user. At the column mount 12<sup>1</sup> there is laterally mounted an arm 22, which by means of a swivel connection 17 is connected to a second support 18. The latter comprises a frame 18<sup>1</sup> a joint 20 secured at the latter and a rest plate 19. Thus, the second support 18 carries a backrest member for supporting the back of a user. Thus, the first support 10 is connected to the base member 12<sup>1</sup> by first hinge means 11 so as to be pivotable about a horizontal axis and the second support 18 is pivotably connected only to the base member 12<sup>1</sup> by second hinge means 17 so as to be pivotable about a horizontal axis. Also, the frame 18<sup>1</sup> is provided with a cross strut 21. The base 12<sup>1</sup> is provided with a further arm member 23, at the free end of which one end portion of resilient means in the form of a telescopic

spring 24 is rotatably secured. The other end portion of the telescopic spring 24 engages rotatably at a cross strut 21 of the frame 18<sup>1</sup>. Here two cables 15 are provided to limit movement of the first support part 10.

As evident, the carrier 10<sup>11</sup> can rest by its rear end on the frame 18<sup>1</sup>, which according to the relative position of the second support 18, additionally limits the movement of the first support 10 rearwardly. By the spring 24, the second support 18 is so resiliently urged towards the back of a user seated on the chair as always to provide good support for the back of the user. On the user changing his posture to cause the seating surface to be inclined forwardly, the second support 18 is moved by the telescopic spring 24 so as to continue to support the back of the user. The user may if he wishes incline the first support 10 forwardly and, simultaneously, incline the second support 18 rearwardly, whereby an extended position against spring force is obtained for the user.

In the case of the embodiment shown in Fig. 2, which represents a chair in a loaded position, the horizontal axle 11 is mounted on a base 12 manufactured from tubes. The carrier 10<sup>11</sup> of the first support part 10, the seating surface of which is adapted to the anatomical shapes of the user, is rotatably borne on the axle 11. Moreover, the frame 18<sup>1</sup> of the second support 18 is also rotatably mounted on the axle 11. The frame 18<sup>1</sup> is provided with an extension or a lug 18a, the free end of which is connected to the base 12 via resilient means in the form of a telescopic spring 24<sup>1</sup>. By the telescopic spring arrangement 24<sup>1</sup> it is made certain, that the spring force acting on the second support, during increasing rearward inclination, increases non-linearly in a manner which cannot be attained with an individual spring. The second support 18 is provided with a two-part frame 18<sup>1</sup> and 18<sup>11</sup>, of which the latter is slightly bent over rearwardly and inserted into the former. By means of a not represented clamping device, the frame part 18<sup>11</sup> may be fixed in different height positions to provide different heights for a backrest 19<sup>11</sup>, the lower end of which projects forwardly and supports the part of the upper portion of the pelvis of the user in an upright seating posture. Both at the carrier 10<sup>11</sup> and also at the frame 18<sup>1</sup> there is rotatably secured respective slotted arrester members 25 or 26, which are each constructed as a fishplate with a slotted hole and both of which embrace a fastener pin 27 secured on the base member 12 (see also Fig. 2a); the arrester members 25 and 26 are flanked on both sides by clamping plates 28 carried on the pin 27. One end portion of the pin 27 carries an axle 29, on which to each side an eccentric plate 30 rotatable

by means of a common handle 31 is provided. During actuation of the handle, the clamping plates are pressed against one another and thereby the arrester members 25 and 26 may be secured in their respective positions. It is therefore possible to fix the first and the second supports quickly in their respective relative positions by actuation of the handle 31.

The clamping device shown in Fig. 2a is only one of the possible embodiments. Thus another embodiment is possible, in which instead of the eccentric plates disposed parallel to the fastener pin 27, cam plates disposed perpendicularly to the longitudinal axis of the fastener pin 27 are employed. In this case again the fastener pin 27 is carried on the base of the chair. It carries at one end a clamping plate and at its other end two cam plates, which act in direction of its longitudinal axis and of which the one is fixed in its relative position, while the other can be swung by means of a handle in the one or the other direction about the longitudinal axis. During the actuation of the handle, the arrester members surrounding the fastener pin are pressed with the clamping plates situated between them with high force against the base, and so the arresters are held in their instantaneous relative position to the tension pin.

The so far described clamping devices have the advantage, that the arresters with corresponding dimensioning can simultaneously also take over the function of member to limit the maximum extent of the relative displacement between the two parts of the chair.

As evident, in the case of that shown in Fig. 2, the frame 18<sup>1</sup> of the second support is curved. Thereby it is achieved, that the second support 18<sup>1</sup> can follow the movement of the back of the user, particularly when the latter, in spite of inclination of the seating surface rearwardly, inclines the upper part of his body very far forwardly.

As is further indicated in Figure 2 in broken lines, the frame 18<sup>1</sup> can also be provided with a direct extension, at which the spring arrangement engaging at the base is secured. The extension of the frame 18<sup>1</sup> which is shown in broken lines in Fig. 2 is so disposed relative to the second support that, during the inclination of the second support towards its extreme rearward position, the effective lever arm extends substantially perpendicularly to the spring thrust line and thus the spring exerts maximum leverage when the second support reaches its extreme rearward position.

In some applications, it may be desirable for the two supports 10 and 18 to be clamped successively rather than simultaneously with one another. In this case, the device for clamping the arrester members is

arranged to operate in a stepwise manner. An example of such a clamping device is shown in Fig. 2b. The clamping device is provided with a middle piece 39, which is rigidly connected with the not represented base member of the chair. The middle piece 39 is provided at each end with a respective transverse bore, through which bolts 27<sup>1</sup> and 27<sup>11</sup> respectively pass. The bolt 27<sup>1</sup> carries at one end an inwardly rounded-off head and at its other end, a thread carrying an inwardly rounded-off nut. The other bolt 27<sup>11</sup> is provided with a head and with a pair of mutually spaced eccentric plates 30, which are rotatable in common about an axle 29 by means of a handle 31.

The two bolts 27<sup>1</sup> and 27<sup>11</sup> are loosely connected to each side of the middle piece 39 by means of respective strips 37 of spring steel. Between the middle piece 39 and the strips 37 are arranged respective rod arrester members 34 and 36, which are shown in cross-section and of which in this case two disposed opposite to one another are associated with one of the supports and the other two with the respective other support of the chair. The spacing of the strips 37 in the region of the bolt 27<sup>1</sup> is so set, that it is a bit smaller than the width of the middle piece 39 plus the sum of the diameters of the two rod arrester members 34. If now, by means of the handle 31, the eccentric plates 30 are rotated, then initially by means of the strips 37, on which the eccentric plates 30 exert pressure, the rod arrester members 34 are clamped fast, while the rod arrester members 36 are still freely movable. During the further rotation of the eccentric plates 30, the strips 37 then bend themselves and clamp fast also the rod arrester members 36. Thus, by operating the clamping device shown in Fig. 2b, it is possible either to hold fast only one of the supports of the chair and to leave the other support of the chair movable, or to clamp both the supports of the chair.

In Fig. 3, again a chair is represented, in which a first support 10 as well as a second support 18 are each rotatably mounted on a horizontal axle 11, which is mounted on a base 12. As evident, the first support 10 is connected to the base 12 via first resilient means in the form of a telescopic spring 44, while second resilient means in the form of a further spring 45 is connected between the first and second supports 10 and 18. The position of the supports 10 and 18 for a rearwardly slightly inclined position is represented in broken lines. By corresponding dimensioning of the spring 45, the backrest carried by the second support 18 exerts pressure against the back of a user seated on the chair, even when the user is leaning forward. The pressure exerted by the backrest may be adjusted by varying the pres-

sure exerted by the further spring 45 by suitable adjuster means (not shown). It can further be of use, as likewise indicated, to associate with the second support 18 an arrester member, the position of which can be fixed by means of a clamping device mounted on the base 12 of the chair.

The chair shown in Fig. 4 is provided with a first support 10, which is rotatable about a horizontal axle 11 mounted on a base 12 and is braced against this by means of a spring arrangement 46. On a second horizontal axle 11<sup>1</sup> mounted on the base 12 there is borne the second support 18, which is coupled to the first support part by means of a further spring 45. As shown in Fig. 4, the second support 18 is so executed, that a backrest cushion 19<sup>1</sup> coming into contact with the back of the user is not rigidly mounted at the frame 18, but can slide on the latter. A control arm 47 connected pivotably to the first support 10 ensures that the backrest cushion 19 constantly maintains the correct spacing from the first support part.

In Fig. 5 there is shown a chair, in which the first support 10 and the second support 18 are each carried by a common axle 11, which is mounted on the base 12. First resilient means in the form of a gas pressure spring 49 is connected to the second support 18 and further resilient means in the form of a gas pressure spring 48 is connected to the first support 10. Both gas pressure springs are connected at their lower ends to the base 12 on a common axle. A control device permits the two gas pressure springs, which on account can act simultaneously as spring arrangements and as arrester means, to be locked in a stepwise manner, i.e. simultaneously or successively, in desired sequence, and indeed by means of a single handle. In Fig. 5a, an exemplary embodiment for such a control arrangement is shown. The common axle, mounted on the base 12, for the gas pressure springs comprises a tube 50, in which bores 51 are provided. Each of the gas pressure springs 48, 49 is screwed in by its lower end into a thread 52, which is mounted at right angles at bearing bushes 53, which by their inner diameter are coordinated with the outer diameter of the tube 50. A control piston 54, which is tapered at its two ends, is displaceable mounted in the tube 50. Its length is so dimensioned, that the control pins 48<sup>1</sup> and 49<sup>1</sup> of the gas pressure springs 48 and 49 can rest simultaneously on the untapered surface portion of the piston 54. By displacement of the control piston 54 in one or the other of the directions indicated by double arrow by means of a handle 31 it is possible to lock the two gas pressure springs 48 and 49 either individually or simul-

taneously, and thus to fix or to free one or the other or both supports 10 and 18.

Chairs such as that shown in Fig. 5 have been found to be particularly advantageous when the user wishes to exert a forwardly directed pressure on a workpiece, as for example in the case of a jewel grinder.

Of course it also applies here, that it is possible to provide only the second support 18 with a spring, but to leave the first support 10 freely movable.

Figs. 6 and 7 show two chairs in which the clamping device for the arrester members are not mounted directly on the frame. In the case of the embodiment shown in Fig. 6, the first and the second supports 10 and 18, both of which are rotatable in common about the horizontal axle 11 mounted in the base 12, are connected to one another by means of a spring 45. The first support 10 is connected to the base 12 by a telescopic spring arrangement 56, in which the sleeve is provided at its lower end with a clamp 57, which can be operated by an element of the clamping device in the form of a pin 29. At the second support 18 there is rotatably secured as arrester means a slotted strip member 26, which by its slotted hole surrounds the pin 29. On actuation of the handle 31, both the strip member 26 and also the telescopic spring 56 are either clamped in their respective positions, or are freed.

In the case of the embodiment shown in Fig. 7, first and second supports 10 and 18 are borne on separate axles 11 and 11<sup>1</sup>, each mounted on the base 12. The supports 10 and 18 are interconnected by a spring 45. The clamping device for the arrester members is mounted on an arm projecting from the first support 10, and the arrester members are rotatably secured to the second support 10 and to the base 12, respectively. A spring 46 applies spring force between the support 10 and the base 12.

Although the above described embodiments show chairs, the invention nevertheless is certainly not restricted to chairs. It is thoroughly possible to apply the shown principles also in the case of easy chairs or couches, as the examples of Figs. 8 and 9 show. The chairs of Figs. 1 and 4, may be provided with arrester members and with a clamping device or with gas springs. Spring adjuster devices (not shown), which permit the force exerted by the springs to be adjusted in accordance with the different weights of persons using the chair, may advantageously be provided.

A possible embodiment for an easy chair or couch is shown in Fig. 8. The first upholstered support 60 is rotatably mounted on the base 61 by means of a horizontal axle 11. As evident, the first support 60 is connected to the base 61 by spring means

44<sup>1</sup>. On the same axle 11 there is borne the second, likewise upholstered, support 62, which is supported against the base 61 by rotatably mounted multi-stage telescopic spring arrangement 24<sup>1</sup>. An arrester member 65 is associated with the first support 60, while an arrester member 66 engages the second support 62. Finally, a third support 70, which acts as a leg support, is rotatably connected by a hinge connection 69 to the first support part 60 by means of a spring arrangement 73, and carries a downwardly pointing arm 71, at the free end of which an arrester member 72 is rotatably secured. The latter surrounds, together with the arresters 65 and 66, the pin of a single clamping device, which is mounted on an arm 61<sup>1</sup> of the base and which is operable by a handle 31. The third support part 70, after releasing of the clamping device, may be folded downwardly and held in this position by any suitable means (not shown).

In the easy chair which has been described with reference to Fig. 8, arrester members co-operating with clamping device have been shown in the drawing, however, gas pressure springs provided with common control device similar to the arrangement which has been described with reference to Figs. 5 and 5a may be employed. Advantageous is a clamping device or control device, which comes into action in a stepwise manner and which permits the inclination of the individual support without reaction on the other supports and which may be employed to lock or free more than two arrester members, or arrester members associated with more than two supports, such as has been described with reference to either Fig. 2b or Fig. 5a. The operation of the so far described easy chair is substantially the same as has been described with reference to the other chairs. A reclining position of the easy chair is represented in broken lines in Fig. 8.

The first support 60 is provided with a profile deviating from that previously described. As is indicated in broken lines, at the rear end of the carrier of the support 60 on both sides there are mounted upwardly pointing arms 60<sup>1</sup>, the free ends of which are connected by means of an elastic component 60<sup>11</sup>. The upholstery of the support 60 is laid over these additional components. Correspondingly, the upholstery of the second support 62 part is shortened, so that in the case of the second support standing upright a narrow gap between the upholsteries of first and second supports is obtained. The elastic component 60<sup>11</sup> has the task of additionally supporting the back of the user in the region of the upper pelvis edge in particular in the case of rearward inclination.

An embodiment in the form of a couch is schematically represented in the Fig. 9. A first upholstered support 60 is rotatably mounted on a base 61<sup>11</sup> by means of a horizontal axle 11. The second support, which is borne on the same axle, comprises two parts and consists of a part 62<sup>1</sup>, which is bent upwardly at its end turned away from the axle 11 and the part 62<sup>11</sup> is at its end turned towards the axle 11 correspondingly upwardly bent, and provided with a rest cushion 63 to provide a reclining support surface. Both parts of the second support are at their bent-up ends connected with one another by means of a hinge connection 67. At the second part 62<sup>11</sup>, in extension of the bending-up, there is provided a downwardly pointing lug 75, at which a spring 24<sup>11</sup> connecting it with the base engages, and which at its lower end carries a rotatably borne roller 76. The latter can co-operate with movement limiting means comprising a run-up ramp 77 mounted on the base. The operation of the components 75 to 77 in conjunction with the parts 60, 62<sup>1</sup> and 62<sup>11</sup> is as follows: If by leaning back the user rearwardly inclines the part 62<sup>11</sup> against the pressure of the spring arrangement 24<sup>11</sup>, then, when the first support 60 is in its rearwardly inclined position, the roller 76 contacts the run-up ramp 7. If now one inclines the second part 62<sup>11</sup> of the second support yet further rearwardly, then the lug 75 co-operates with the ramp 77 to act as movement limiting means by which the second part 62<sup>11</sup> may be inclined still further rearwardly and thereby draws the first part 62<sup>1</sup> with it upwardly. The part 62<sup>1</sup> comes into contact with the undersurface of the first support 60 and raises the latter at its rear end. Via the lever action of the part 62<sup>11</sup> in relation to the lug 75, therefore an even lying surface may be achieved.

The step spring arrangement 24<sup>11</sup> can, if it is appropriately dimensioned, when fully retracted serve as movement limiting means defining a fulcrum about which the part 62<sup>11</sup> is pivotably displaceable in a manner analogous to that which has been described above in relation to the lug 75 and the ramp 77.

As evident, a third support 70, which forms a support for the lower portions of the legs of a user, is mounted by means of a hinge connection 69 at one end of the first support 60. The third support 70 is connected to the first support 60 by means of a spring arrangement 73 and is provided at its one end with a downwardly directed arm 71, at the free end of which an arrester member 72 is rotatably secured. The latter, together with three further arrester members 65, 66 and 66<sup>1</sup>, of which the arrester member 65 is associated with the first support 60 and the arrester members 66 and 66<sup>1</sup> are each as-

sociated with the second support part 62<sup>11</sup>, surrounds, the pin of a common clamping device, which is mounted on the base and which is bringable into and out of action by means of a handle 31.

With advantage, also here the clamping device is so constructed, that the arrester members can be locked successively. So one has then the possibility of holding fast for example the first and the third supports in their instantaneous position, and moving the second support part 62<sup>11</sup> on the other hand against the force of the spring arrangement 24<sup>11</sup>. An important application for this couch is seen in the care of the sick.

It should not remain unmentioned, that in the case of the embodiment shown in Fig. 9 the arrester member associated with the part 62<sup>11</sup> can take over the function of the limiter and of the abutment, if the tension device is appropriately mounted on the base. In this case, the components 76 and 77 can be dispensed with.

It also remains yet to be mentioned, that the carrier spring arrangement 24<sup>11</sup> for the second support part 62<sup>11</sup>, can engage directly or via an intermediate element on the ground below the couch instead of at the base structure of the couch, if the article of furniture is erected fixedly, as is the case for example in lecture halls or cinemas.

#### WHAT I CLAIM IS:—

1. A chair or couch comprising a base member, a first support carrying a seating surface for supporting the seat of a user, a second support carrying a backrest member for supporting the back of a user, the first support being connected to the base member by first hinge means so as to be pivotable about a horizontal axis, the second support being pivotably connected to the base member by second hinge means so as to be pivotable about a horizontal axis, and resilient means so connected to the second support that the latter is resiliently urged towards and supports the back of a user, the first support and the second support each—when loaded by a user—being pivotably displaceable independently of one another within predetermined limits about the respective hinge means, the first hinge means being so located relative to the first support that the first support may, at the option of a user seated on the first support with his back being constantly supported by contact with the backrest, be both rearwardly and forwardly inclined relative to the horizontal by the user adjusting his posture and thereby varying the pressure of the users' thighs on a part of the first support projecting forwardly of the first hinge means without substantial displacement of the weight of the user relative to the first hinge means.

2. A chair or couch as claimed in claim 1, wherein the axis of rotation of the first

hinge means is so located relative to the first support that at least one quarter of the length of the first support projects forwardly of the axis and at least one quarter of the length of the first support projects rearwardly of the axis.

3. A chair or couch as claimed in either claim 1 or claim 2, wherein the horizontal axis of the second hinge means is situated on or next adjacent a straight line bisecting the circular arc described by a straight line through both hip joints of a user sitting normally of the first support during the simultaneous and mutually independent movement of the first and second support.

4. A chair or couch as claimed in any one of the preceding claims, wherein the axis of rotation of the second hinge means is substantially parallel to the axis of rotation of the first hinge means.

5. A chair or couch as claimed in any one of claims 1 to 3, wherein the respective axes of rotation of the first and second hinge means are coincident.

6. A chair or couch as claimed in any one of the preceding claims, comprising at least one lever arm projecting from the second support, one end portion of the or each lever arm being rigidly connected to the second support and the other end portion of the or each lever arm being connected to the resilient means, the or each lever arm being so disposed relative to the line of action of the resilient means that, on the second support being pivotably displaced in such a direction as to increase the force exerted thereon by the resilient means, the leverage exerted on the second support by the resilient means progressively increases.

7. A chair or couch as claimed in any one of claims 1 to 5, wherein the second support and the base member are interconnected by the resilient means.

8. A chair or couch as claimed in any one of claims 1 to 6, wherein the resilient means is connected to the second support and is adapted to be connected to a ground support, to which the base member is also adapted to be attached.

9. A chair or couch as claimed in any one of claims 1 to 8, wherein the resilient means comprises at least one resilient element having a non-linear characteristic.

10. A chair or couch as claimed in any one of claims 1 to 8, wherein the resilient means comprises at least one pressure fluid operable device.

11. A chair or couch as claimed in any one of the preceding claims, comprising second resilient means connected between the first support and the base member.

12. A chair or couch as claimed in claim 11, the second resilient means comprising at least one pressure fluid operable device.



13. A chair or couch as claimed in either claim 10 or claim 12, wherein the or each pressure fluid operable device is selectively lockable.

5 14. A chair or couch as claimed in claim 11, wherein each of the first mentioned and the second resilient means comprises at least one pressure fluid operable device, each said device being selectively lockable by actuation of a single manually operable device.

10 15. A chair or couch as claimed in any one of claims 1 to 9 or claim 11, comprising at least one arrester member pivotably connected to the second support and lockable by operation of a clamping device to prevent pivotable displacement of the second support about the second hinge means.

16. A chair or couch as claimed in any one of claims 1 to 12, comprising at least one arrester member pivotably connected to each of the first and second supports, each said arrester member being selectively lockable to prevent pivotable displacement of the respective first and second support with respect to their respective hinge means and each said arrester member being lockable by manual operation of a single clamping device.

17. A chair or couch as claimed in any one of the preceding claims, comprising a third support—for supporting the lower portions of the legs of a user—connected to the first support by a third hinge means so as to be pivotable about a horizontal axis, further resilient means connected to the third support to urge the latter towards the lower portions of the legs of the user, and at least one arrester member selectively lockable by the common single clamping device to retain the third support in a selected operational position.

18. A chair or couch as claimed in any one of claims 15 to 17, wherein the or each clamping device is mounted on the base member.

19. A chair or couch as claimed in claim 16, wherein the single clamping device is mounted on the first support.

20. A chair or couch as claimed in claim 16, wherein the single clamping device is mounted on an arm projecting from the first support.

21. A chair or couch as claimed in any one of claims 16 to 20, wherein the single clamping device is so constructed that it comes into action stepwise during actuation of the single clamping device in such a manner that the respective arrester members or respective groups of arrester members are freed or locked successively.

22. A chair or couch as claimed in any one of claims 16 to 21, wherein the or each arrester member connected to the first support, after the respectively associated clamping device has been released, continues to

restrain pivotal displacement of the first support by the action of sliding frictional force between the or each said arrester member and the clamping device.

23. A chair or couch as claimed in any one of the preceding claims, wherein the second support comprises a pad member for contacting the back of a user, the pad member being slidably mounted on a frame member of the second support and so connected to the first support by a control lever that its height above the first support is adjustable in dependence on relative angular displacement between the first and second supports.

24. A chair or couch as claimed in any one of the preceding claims, comprising a resilient support member provided at the rear extremity of the first support, the resilient support member projecting above the seating surface of the first support to provide support for the pelvis of a user.

25. A chair or couch as claimed in claim 24, wherein the first support comprises a carrier frame having side members extending along each side of the seating surface of the first support, the rear end portions of the respective side members projecting upwardly beyond the seating surface and the resilient support member being supported on said rear end portions of the respective side members.

26. A chair or couch as claimed in any one of the preceding claims, wherein the second support is so constructed and arranged, and the rotary axis of the second hinge means is so situated that—when a user is seated in an upright posture—that part of the second support coming into contact with the back of the user during variation of relative inclination of the first and the second supports, is maintained at a substantially constant spacing from a notional straight line defined by the hip joints of the user.

27. A chair or couch as claimed in any one of the preceding claims, wherein the second support comprises two components which are connected together by further hinge means, an outer one of these two components being provided with a member adapted to support the upper part of the back of a user reclining on the couch.

28. A chair or couch as claimed in claim 27, wherein at least one movement limiting device is provided for the outer component, the or each such movement limiting device becoming effective in dependence upon the position of the inner component of the second support relative to the base.

29. A chair or couch as claimed in claim 11, wherein the second resilient means comprises at least one resilient element having a non-linear characteristic.

30. A chair, substantially as hereinbefore

described and illustrated with reference to Fig. 1 of the accompanying drawings.

31. A chair, substantially as hereinbefore described and illustrated with reference to

5 Fig. 2 of the accompanying drawings.

32. A chair as claimed in claim 31 and substantially as hereinbefore described and illustrated with reference to either Fig. 2a or

10 Fig. 2b of the accompanying drawings.

33. A chair substantially as hereinbefore described and illustrated with reference to either Figs. 3 or Fig. 4 of the accompanying drawings.

15 34. A chair substantially as hereinbefore described and illustrated with reference to Fig. 5 and Fig. 5a of the accompanying drawings.

35. A chair substantially as hereinbefore described and illustrated with reference to either Fig. 6 or Fig. 7 of the accompanying drawings. 20

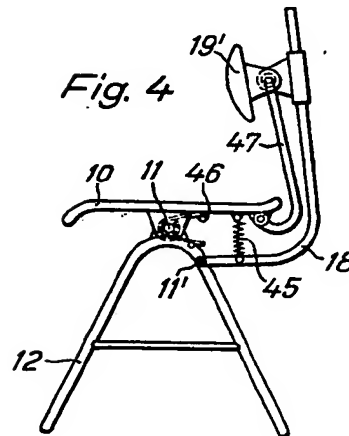
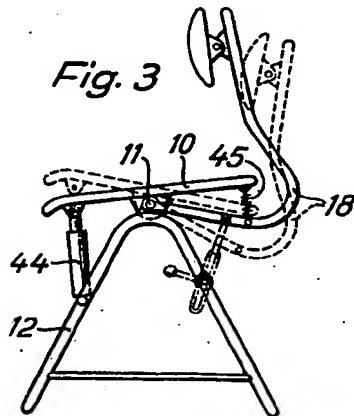
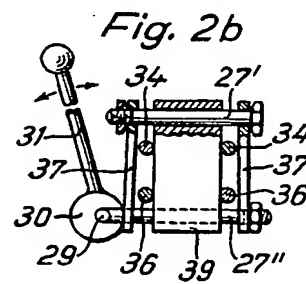
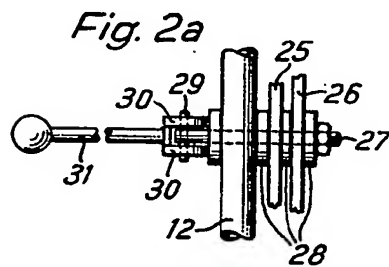
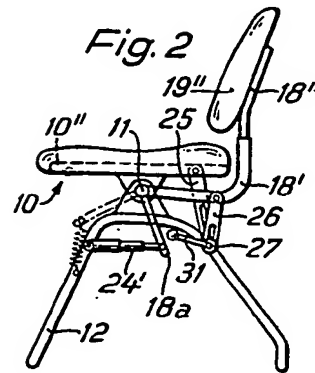
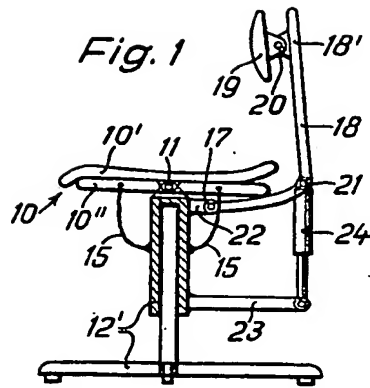
36. A chair or couch, substantially as hereinbefore described and illustrated with reference to Fig. 8 of the accompanying drawings. 25

37. A couch substantially as hereinbefore described and illustrated with reference to Fig. 9 of the accompanying drawings.

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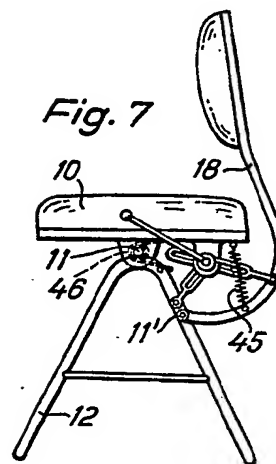
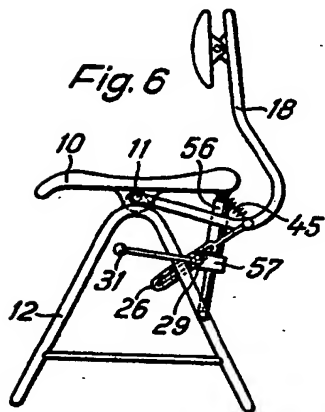
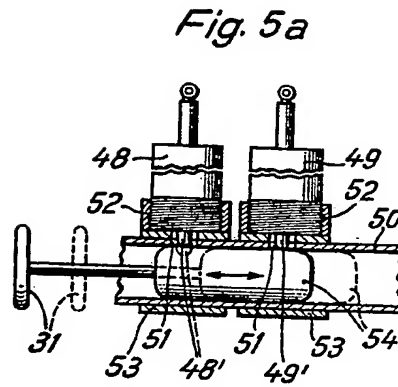
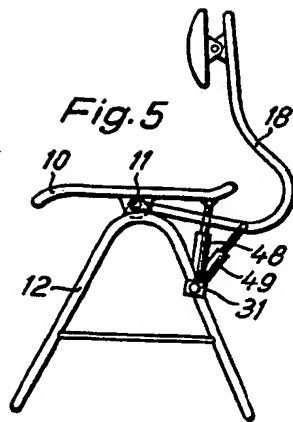


Fig. 8

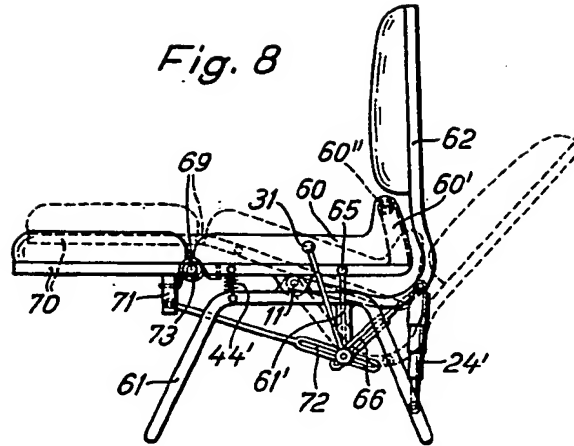
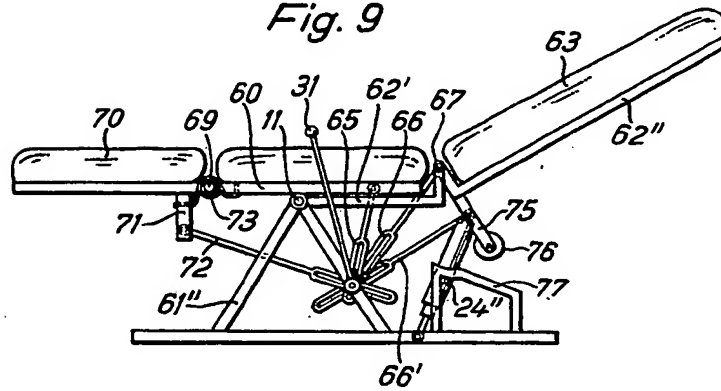


Fig. 9



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